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Work Plan for Sooner Dial Company Site
Clinton, Oklahoma

INTRODUCTION

In brief summary, this site, near downtown Clinton, is the former location of an aircraft instrument refinishing operation which operated under the name of Sooner Dial Company. In the process of refurbishing these instruments, a mixture of radium and a paint containing a phosphor activated by the alpha particles emitted by the radium was applied to the instrument dials. The process of removing the old radium/paint mixture and the application of new paint created substantial amounts of radium-contaminated waste. Some of the waste was in the form of a slurry while some was in the form of very small pieces of metal or hardened paint. Generally, the handling, storage, and disposal of such waste usually did not even approach the measures which would be taken today in a similar situation.

Thus, it is not surprising to find significant radium contamination at this site as a result of the operations carried out there in the past by Sooner Dial Company.

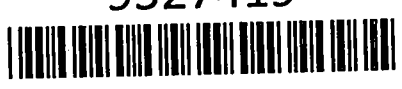
Purpose of this Plan

1. To describe in some detail a plan for determining the scope and extent of the radium contamination at this site and any which exists in adjoining or nearby areas.

2. To the extent that decontamination activities may occur in conjunction with site assessment, to describe in general terms the activities which will (or may) be necessary in order to decontaminate the site to a level suitable for unrestricted use.

Site Assessment Plan

1. Establish a grid system with 5-meter-square grids over the entire Sooner Dial site exclusive of the auto shop building on the north side of the site. The grid system should cover the easements, the alley, and any other publicly-owned strips of land abutting the site. The grid system should be marked with stakes or flags or in some other appropriate fashion; the grid should be displayed on a scale drawing of the site as well.



2. Using the grid system as a guide, survey and record the gamma radiation levels at the surface and at a height of 1 meter above the surface at each corner established by the grid. Isopleths of the gamma levels found should be created on the scale drawing of the site.

3. For those locations exceeding a pre-determined level - 5 times background, for example - additional, more detailed surveys should be conducted, and the data collected recorded for use in the assessment.

4. Core samples from holes at selected locations, based on the data from #2 and 3 above, should be collected and analyzed for radium content. Coring should be to a minimum depth of 6 feet with each 6-inch segment analyzed separately. If the initial core samples indicate extensive radium contamination of soil more than 6 inches below the surface, additional coring should be considered for the purpose of more accurately assessing the site.

5. Using some written protocol which assures completeness of the survey, the buildings and concrete slab on the north side of the site should be surveyed.

6. To the extent to which owners' permission can be obtained, survey the private property immediately to the west of the alley behind the site and the building immediately south of the site and any open ground or parking lots associated with this building. These surveys should be conducted in a manner consistent with the procedures adopted for use in #1, 2, 3, and 5 above.

7. Without intruding on private property, survey the neighborhood of the site at a radius of about 2 - 3 city blocks in all directions. The survey locations should be selected to be representative of the area being surveyed; these locations should be described and recorded for future reference.

8. For the "south" site (a lot about 2 miles south of the Sooner Dial site to which building material debris from the Sooner Dial site had been taken several years ago), a gamma survey of sufficient detail should be conducted to determine any areas where the gamma level at 1 meter above the surface exceeds a pre-determined value. Any such areas identified should be plotted on a scale drawing of the south site. If preliminary surveys indicate extensive contamination due to Sooner Dial site debris, further surveys should be done, and soil samples from appropriate areas should be taken for analyses.

9. Based on the data collected as a result of the activities described in items #1 through 8 and in consideration of decontamination guidelines for radium, a site assessment document should be prepared which contains the following information:

a. projected length of time to complete decontamination and clean-up activities;

b. unusual contingencies which do or may exist which would affect decontamination and clean-up activities;

c. estimated resource requirements in terms of personnel, tools, radiation detection equipment, radiochemistry laboratory services, heavy equipment such as trucks, expendable supplies, and waste disposal services for waste removed from the site; and

d. estimated costs associated with the decontamination and clean-up.

Decontamination/Clean-up Activities

10. Based on the information known at this time, and with consideration of good health physics practice in regard to radium contamination, the following activities are expected to occur as a result of efforts to decontaminate and clean-up so that the Sooner Dial site and, as necessary, the south site are left in a finished state for unrestricted release:

a. extensive moving, excavation, or disturbance of surface and sub-surface soil;

b. categorization of radium contamination in disturbed soil based on either field surveys for gamma or laboratory analyses or both;

c. separation of the categorized soils into piles or distinct areas;

d. excavation of buried radium-rich shop waste, if present, and packaging of such waste into suitable containers;

e. packaging of highly-contaminated soil into suitable containers and shipment of this waste as well as that mentioned in 10(d) and 10(h) to a low-level radioactive waste (LLW) broker or direct to a LLW disposal site;

f. replacement of slightly-to-moderately contaminated soil on the site, preferably in a fashion so that it is no longer at the surface;

g. acquisition and placement of fresh, non-contaminated soil on the site surface to restore site topography and to facilitate seeding with grass or other vegetation;

h. removal of any radium found to be above guidelines on building structures such as floors or walls;

i. necessary activities to respond to inquiries from local residents or from the news media;

j. those routine health physics activities necessary to provide proper personnel protection to workers and to assure the safety of the general public, especially passers-by and neighborhood residents; and

k. any activities arising from the need to cope with any unanticipated or extraordinary occurrence during this clean-up process.

Equipment and Services

11. The grid system should be established using recognized land surveyor methods.

12. The radiation detection equipment necessary to accomplish the activities mentioned in #2, 3, 5, 6, 7, 8, 10(b), 10(h), 10(j), and 10(k) must be of the type normally referred to as "micro-R meters" and capable of measuring gamma radiation at levels ranging from 1 micro-Roentgen per hour (μR/hr) to several thousand μR/hr. The normal gamma background in Clinton, but not on the site, is about 8 μR/hr as determined by such an instrument.

13. In addition, portable radiation detection instruments capable of detecting gamma, beta, and alpha radiation must be available for use at the site. Activities mentioned in #5, 6, and 10(j) are likely uses of such instrumentation.

14. Personal and area air samplers and dosimeters will be required to meet the scope of 10(j).

15. Other personal protective equipment which may be required include respirators, goggles, gloves, hard hats, and work shoes or boots.

16. The radiochemistry laboratory used must be able to analyze soil samples for radium (reported in units of picoCuries per gram, dry weight) using procedures which allow for consistency in counting geometry and detector efficiency. The laboratory must be capable of conducting gross alpha/ gross beta and/or radium analyses on materials deposited on paper

filters, reported in units of net counts per minute with a counting efficiency factor or in disintergrations per minute. The laboratory should have the capacity of performing analyses for gross alpha, gross beta, or radium on samples of differing media.

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